TDB-ACC-NO: NN8711244

DISCLOSURE TITLE: Hydrofluoric Acid Treatment of Quartz Surfaces

PUBLICATION-DATA: IBM Technical Disclosure Bulletin, November 1987, US

VOLUME NUMBER: 30

ISSUE NUMBER: 6

PAGE NUMBER: 244

PUBLICATION-DATE: November 1, 1987 (19871101)

CROSS REFERENCE: 0018-8689-30-6-244

DISCLOSURE TEXT:

- By treating a quartz surface on a silicon wafer with a brief exposure to a dilute solution of buffered hydrofluoric acid, the surface is modified. The treatment improves the adhesion of a photoresist coating needed for further processing steps. Poor adhesion of the photoresist coating on quartz deposited on silicon wafers can be a yield detractor. The normal preparation process is to first preclean the wafer with a combination of solutions and then bake the wafer dry. The preclean step is then followed by an adhesion promoter, such as a silazane, prior to application of the photoresist coating. The improved process adds a hydrofluoric acid treatment after the precleaning step and prior to the application of the adhesion promoter.

Experiments show that dipping the wafer for 15 seconds in a solution of buffered hydrofluoric acid solution diluted

by water in the ratio one part acid to five parts water is sufficient. After the acid treatment, the surface wets all over in contrast to the droplets formed on an untreated surface. It is believed that the treatment forms active hydroxyl sites on the quartz surface of the wafer which react with the silazane adhesion promoter to improve the bonding to the surface.